George Hondroyiannis and Eleni Sardianou

ESTIMATING GASOLINE CONSUMPTION OF GREEK HOUSEHOLDS

G. Hondroyiannis: Bank of Greece, Economic Research Dep., El. Venizelou 21, 102 50 Athens, Greece
Phone: +30 210-3202429, Fax: +0030 210-3233025, E-mail: ghondroyiannis@bankofgreece.gr.
E. Sardianou: Harokopio University 70, El. Venizelou Av., 176 71 Athens, Greece
Phone: +30 210-9549219, Fax: +30 210–9577050, E-mail: esardianou@hua.gr,

Overview[1]

Unsustainable energy consumption patterns have been identified as one of the key driving forces behind the global environmental problems. The aim of the study is on the one hand to compose the profile of car owner consumer and on the other hand to test for differences in gasoline consumption with regards to the consumers' socioeconomic characteristics. In order to gain comfort and time households are becoming excessive energy users, neglecting the environmental impact of their choices. According to household production theory, households are treated as productive units organized to provide services for the occupants; energy is treated as input in the provision of a range of household services. Consumers' choices define the utility they can derive. Since consumers receive utility from the transportation services that gasoline in combination with an automobile determine, gasoline demand is an indirect demand.

Methods

In this paper, following the consumer theory approaches by Becker (1965), Lancaster (1966) and Muth (1966), we model gasoline demand as a derived demand into the household production of transport services. Consumers face two decisions. There is the decision of whether to own a car or not, which determines the households' car portfolio and the decisions as to the utilization of the car, which determines households' gasoline expenditure conditional on consumers' socio-economic characteristics. The econometric model used in this study involves probit estimation for car ownership. The gasoline expenditure equation is estimated using the Heckman (1979) approach. Finally, we employ quantile regression analysis in order to model the impact of consumers' characteristics to different levels of gasoline expenditures.

Empirical analysis is based on a cross section data. An extensive survey of 586 Greek households was carried out from the 1st of June to 31st of August 2003. The form of the survey was a questionnaire, which was administered using face-to-face interviews with one adult from each household in their home. A total of 500 questionnaires were completed.

Results

Empirical results from a selection corrected gasoline demand regression suggest that, individuals' and households' economic and social characteristics may explain differences among consumers' decisions towards car ownership and gasoline consumption. The results show that variables such as consumers' income, sex and family and occupational status are suitable to explain decisions towards car ownership. In addition, the results suggest that demographic, economic and attitude characteristics on the one hand, and quality of services of public transport means on the other hand, are suitable to explain differences towards gasoline expenditures. The estimated income elasticity was found 0.524. Finally, the results show that consumers with high level gasoline expenditures are more willing to limit their transportation in case of a gasoline price increase than others.

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Conclusions

Utilizing cross-section data, we conclude that consumers' characteristics do specify energy behaviours with regards to transportation needs. A gasoline saving campaign should face consumers as subgroups with different needs and different aspects of lifestyle. An alternative strategy should address the excessive use of gasoline by proposing a framework based on the improvement of the quality of services that public transport means offers to Greek consumers.

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